

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the above-identified application:

Listing of Claims

Claim 1 (Previously presented): An image retrieval apparatus implemented in a computer system for retrieving a desired image from a plurality of stored images, comprising:

storage means for storing the plurality of images and an image feature set of each of the plurality of images in a form correlated with the image, wherein the image feature set of each image includes image features of a predetermined number of tile images obtained by dividing an image into the predetermined number of tiles;

feature calculation means for dividing a retrieval source image into the predetermined number of tile images and obtaining an image feature set of the retrieval source image by calculating an image feature of each of the tile images;

acquisition means for generating a plurality of image feature sets by multiplying an image feature included in an image feature set stored in said storage means by a constant, and acquiring a plurality of image feature sets regarding one image by varying the constant;

similarity calculating means for calculating degree of similarity between each of the plurality of images and the retrieval source image based on the plurality of image feature sets acquired by the acquisition means and the image feature set calculated by the feature calculation means, wherein said similarity calculating means calculates degree of similarity between each image feature set of the plurality of image feature sets acquired by said acquisition means and the image feature set calculated by said feature calculation means, and

adopts maximum degree of similarity for each of the stored images as the degree of similarity between each of the stored images and the retrieval-source image; and

retrieval means for retrieving the desired image from the plurality of stored images based on the degrees of similarity between the plurality of stored images and the retrieval source image, calculated by said similarity calculating means.

Claim 2 (Previously presented): The apparatus according to claim 1, wherein said acquisition means generates N image feature sets by multiplying a luminance component of the image features that have been stored in said storage means by N constants.

Claim 3 (Previously presented): The apparatus according to claim 1, wherein said acquisition means generates N image feature sets by multiplying a color-difference component of the image features that have been stored in said storage means by N constants.

Claim 4-6 (Canceled).

Claim 7 (Previously presented): The apparatus according to claim 1, wherein said acquisition means has specifying means for allowing an operator to specify number of steps over which the constant is varied as well as the amount of change provided by each step.

Claim 8 (Cancelled).

Claim 9 (Previously presented): An image retrieval method implemented in a computer system for retrieving a desired image from storage means storing a plurality of images and an image feature set of each of the plurality of images in a form correlated with the image, wherein the image feature set of each image includes image features of a predetermined number of tile images obtained by dividing an image into the predetermined number of tiles, said image retrieval method comprising:

a feature calculation step of dividing a retrieval source into the predetermined number of tile images and obtaining an image feature set of the retrieval source image by calculating an image feature of each of the tile images;

an acquisition step of generating a plurality of image feature sets by multiplying an image feature included in an image feature set stored in the storage means by a constant, and acquiring a plurality of image feature sets regarding one image by varying the constant;

a similarity calculating step of calculating degree of similarity between each of the plurality of images and the retrieval source image based on the plurality of image feature sets acquired at said acquisition step and the image feature set calculated at said feature calculation step, wherein said similarity calculating step calculates degree of similarity between each image feature set of the plurality of image feature sets acquired in said acquisition step and the image feature set calculated in said feature calculation step, and adopts maximum degree of similarity for each of the stored images as the degree of similarity between each of the stored images and the retrieval-source image; and

retrieval step of retrieving the desired image from the plurality of stored images based on the degrees of similarity between the plurality of stored images and the retrieval source image, calculated by said similarity calculating means.

Claim 10 (Previously presented): The method according to claim 9, wherein said acquisition step generates N image feature sets by multiplying a luminance component of the image features that have been stored in the storage means by N constants.

Claim 11 (Previously presented): The method according to claim 9, wherein said acquisition step generates N image feature sets by multiplying a color-difference component of the image features that have been stored in said storage means by N constants.

Claims 12-14 (Cancelled).

Claim 15 (Previously Presented): The method according to claim 9, wherein said acquisition step includes a specifying step of allowing an operator to specify number of steps over which the constant is varied as well as the amount of change provided by each step.

Claim 16 (Cancelled).

Claim 17 (Currently amended): A storage medium storing a control program for causing a computer to execute image retrieval processing for retrieving a desired image from storage means storing a plurality of images and an image feature set of each of the plurality of images in a form correlated with the image, wherein the image feature set of each image includes image features of a predetermined number of tile images obtained by dividing an image into the predetermined number of tiles, said control program being executed and implemented in a computer system comprising:

~~code of~~ a feature calculation step of dividing a retrieval source image into the predetermined number of tile images and obtaining an image feature set of the retrieval source image by calculating an image feature of each of the tile images;

~~code of~~ an acquisition step of generating a plurality of image feature sets by multiplying an image feature included in an image feature set in the storage means by a constant, and acquiring a plurality of image feature sets regarding one image by varying the constant;

~~code of~~ a similarity calculating step of calculating degree of similarity between each of the plurality of images and the retrieval source image based on the plurality of image feature sets acquired at said acquisition step and the image feature set calculated at said feature calculation step, wherein said similarity calculating step calculates degree of similarity

between each image feature set of the plurality of image feature sets acquired in said acquisition step and the image feature set calculated in said feature calculation step, and adopts maximum degree of similarity for each of the stored images as the degree of similarity between each of the stored images and the retrieval-source image; and

~~code of~~ a retrieval step of retrieving the desired image from the plurality of stored images based on the degrees of similarity between the plurality of stored images and the retrieval source image, calculated by said similarity calculating means.

Claim 18 (Cancelled).

Claim 19 (Previously presented): An image retrieval apparatus implemented in a computer system for retrieving a desired image from a plurality of stored images, comprising:

input means for inputting a retrieval source image, the retrieval source image including color components;

feature calculating means for obtaining an image feature set by calculating image feature of each color component of the retrieval source image, respectively;

selection means for selecting one image from a plurality of images stored in a database;

reading means for reading an image feature set of the selected image;

generation means for generating a plurality of image feature sets by multiplying the image feature set of the retrieval source image or the image feature set of the selected image by a variable;

calculation means for calculating a set of degrees of similarity between the retrieval source image and the selected image, using plurality of feature sets generated by said generation means;

determination means for determining maximum degree of similarity for each of the stored images from the set of degrees of similarity as a degree of similarity between the retrieval source image and the selected image; and

retrieval means for retrieving the desired image by repeating process by said selection means, said reading means, said generation means and said determination means.

Claim 20 (Previously presented): An image retrieval method implemented in a computer system of retrieving a desired image from a plurality of stored images, comprising:

an input step of inputting a retrieval source image, the retrieval source image including color components;

a feature step of obtaining an image feature set by calculating image feature of each color component of the retrieval source image, respectively;

a selection step of selecting one image from a plurality of images stored in a database;

a reading step of reading an image feature set of the selected image;

a generation step of generating a plurality of image feature sets by multiplying the image feature set of the retrieval source image or the image feature set of the selected image by a variable;

a calculation step of calculating a set of degrees of similarity between the retrieval source image and the selected image, using the plurality of feature sets generated in the generation step;

determination step of determining maximum degree of similarity for each of the stored images from the set of degrees of similarity as a degree of similarity between the retrieval source image and the selected image; and

retrieval step of retrieving the desired image by repeating process at said selection step, said reading step, said generation step and said determination step.